Making Sense of Today's Energy Markets

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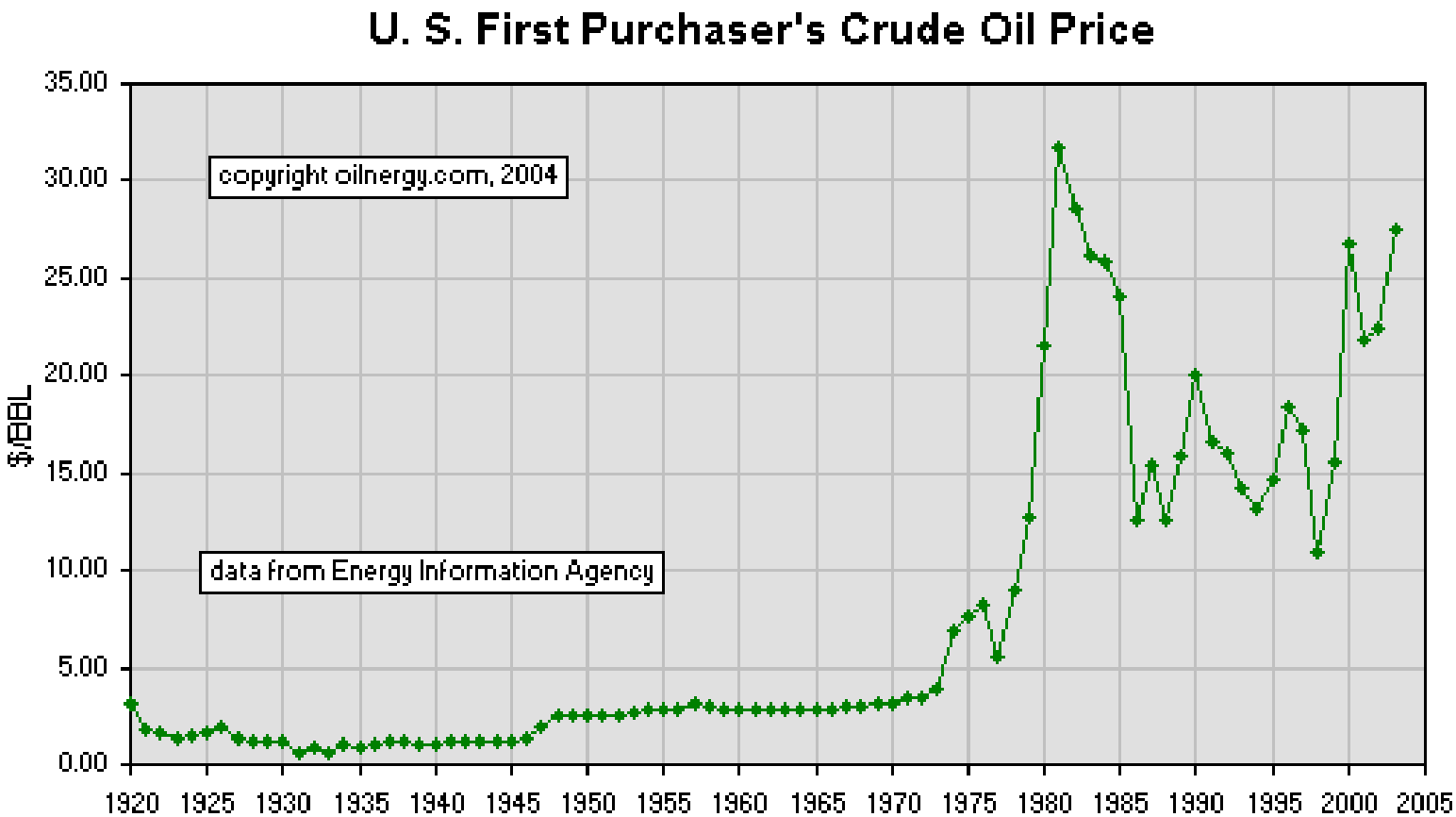
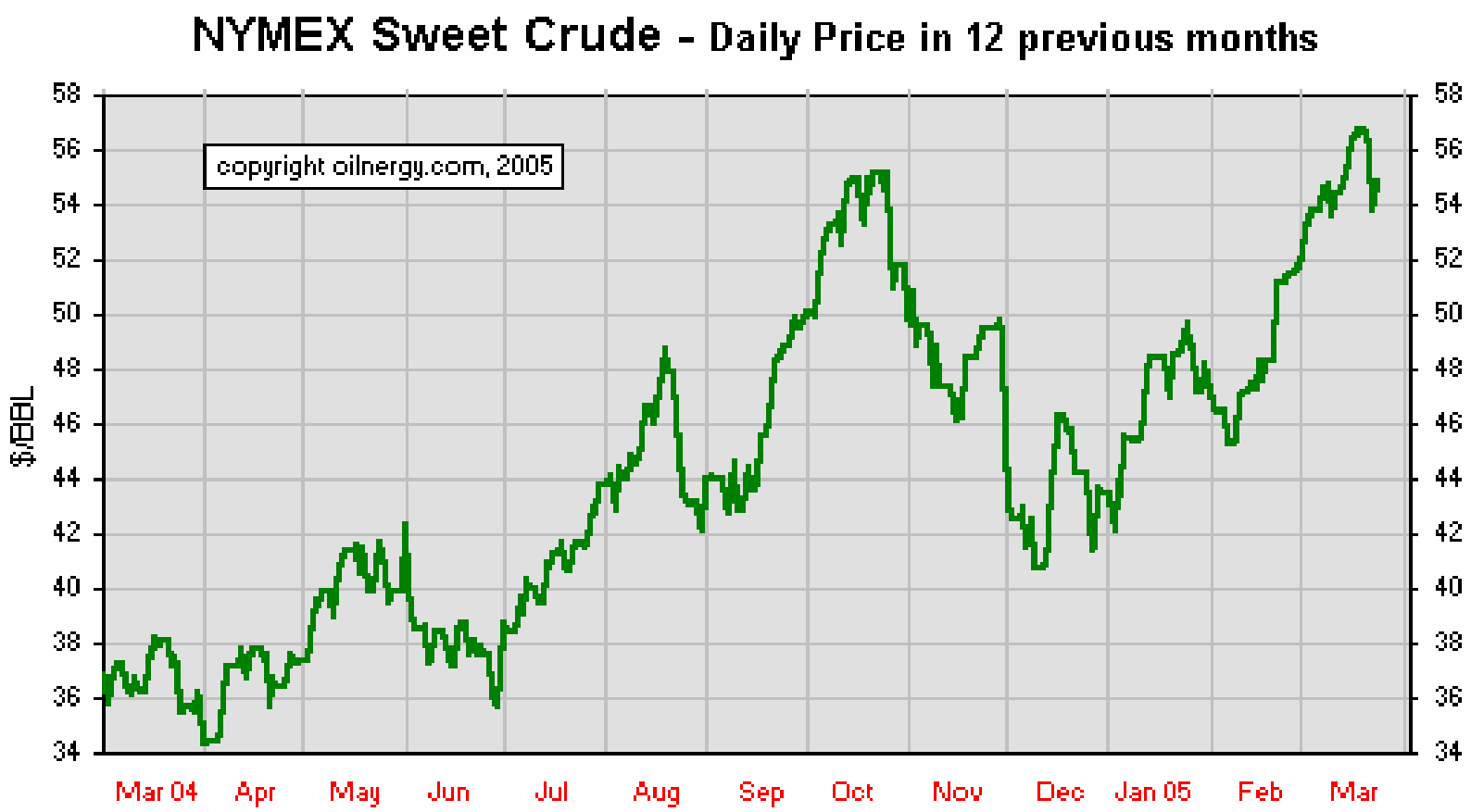
Today's Energy Markets

- Energy prices are very high compared to historical norms:
  - Record crude oil prices of $57 per barrel
  - Natural gas prices over $7 per MMBTU for a 12 month NYMEX strip despite strong fundamentals (demand, production, and storage)
  - Record high coal prices
  - Electricity prices are following suit
- Energy prices have become extremely volatile with very large intra-day and inter-day changes

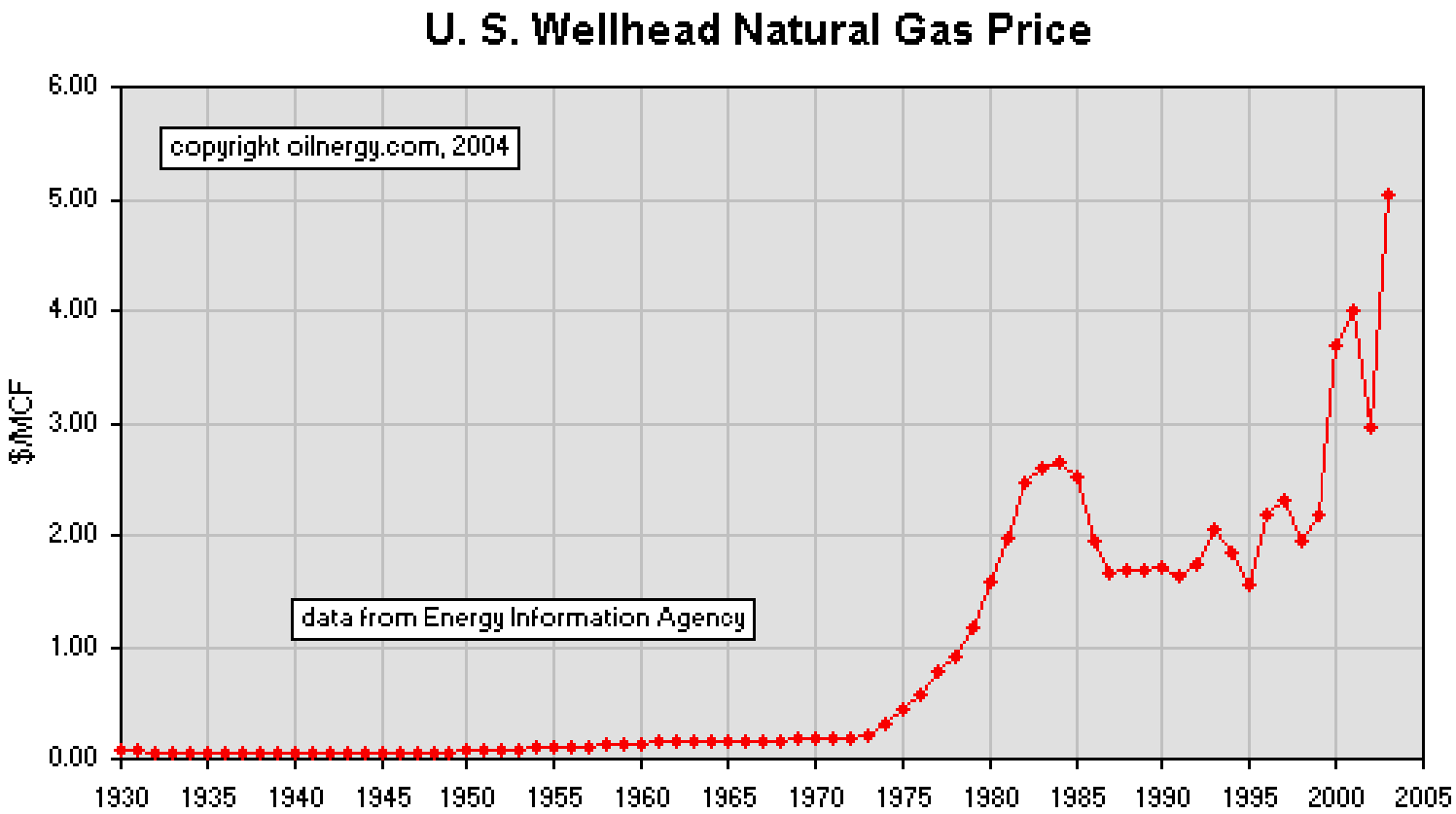
Oil Price Trends



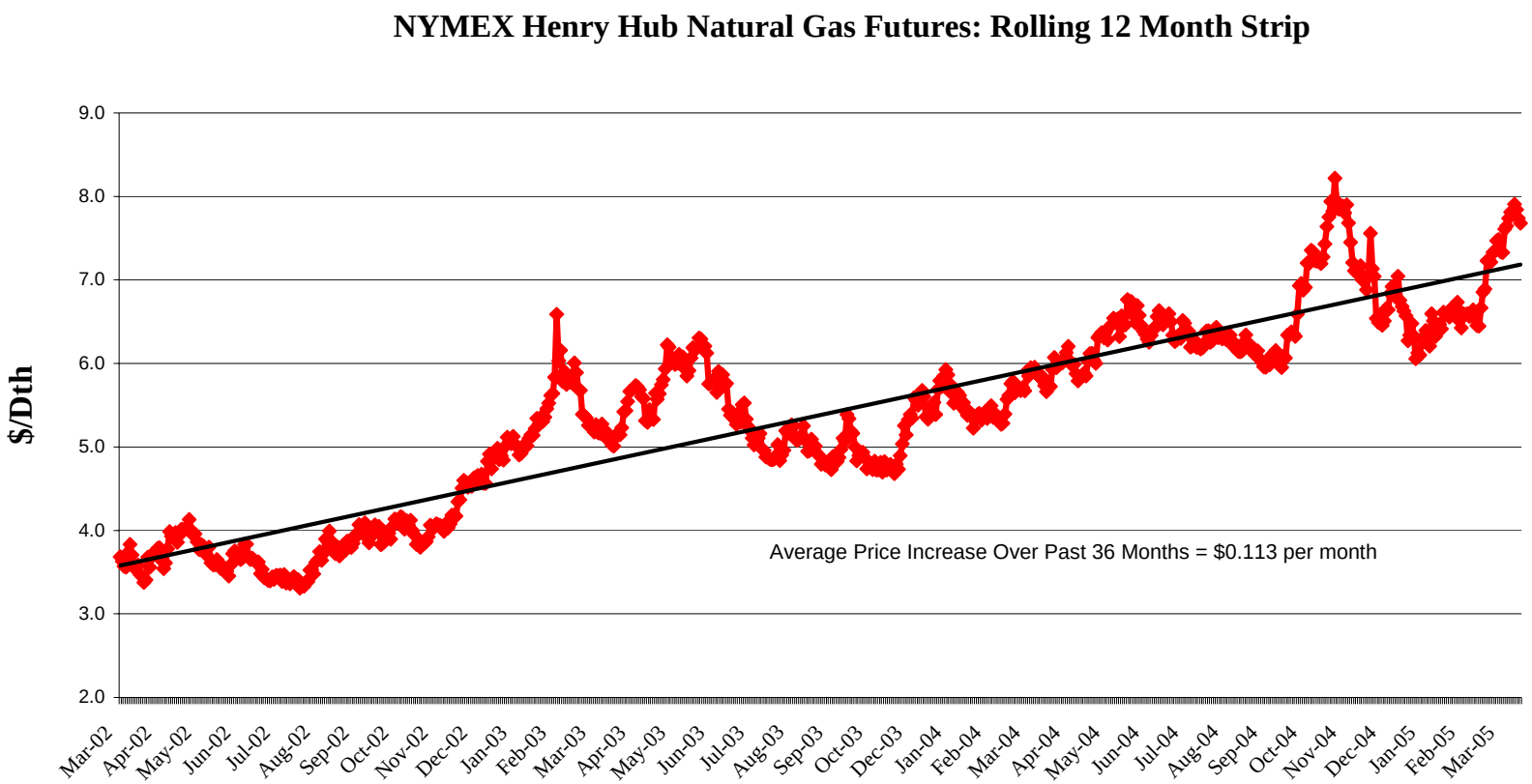
Oil Price Trends (2)



Natural Gas Price Trends

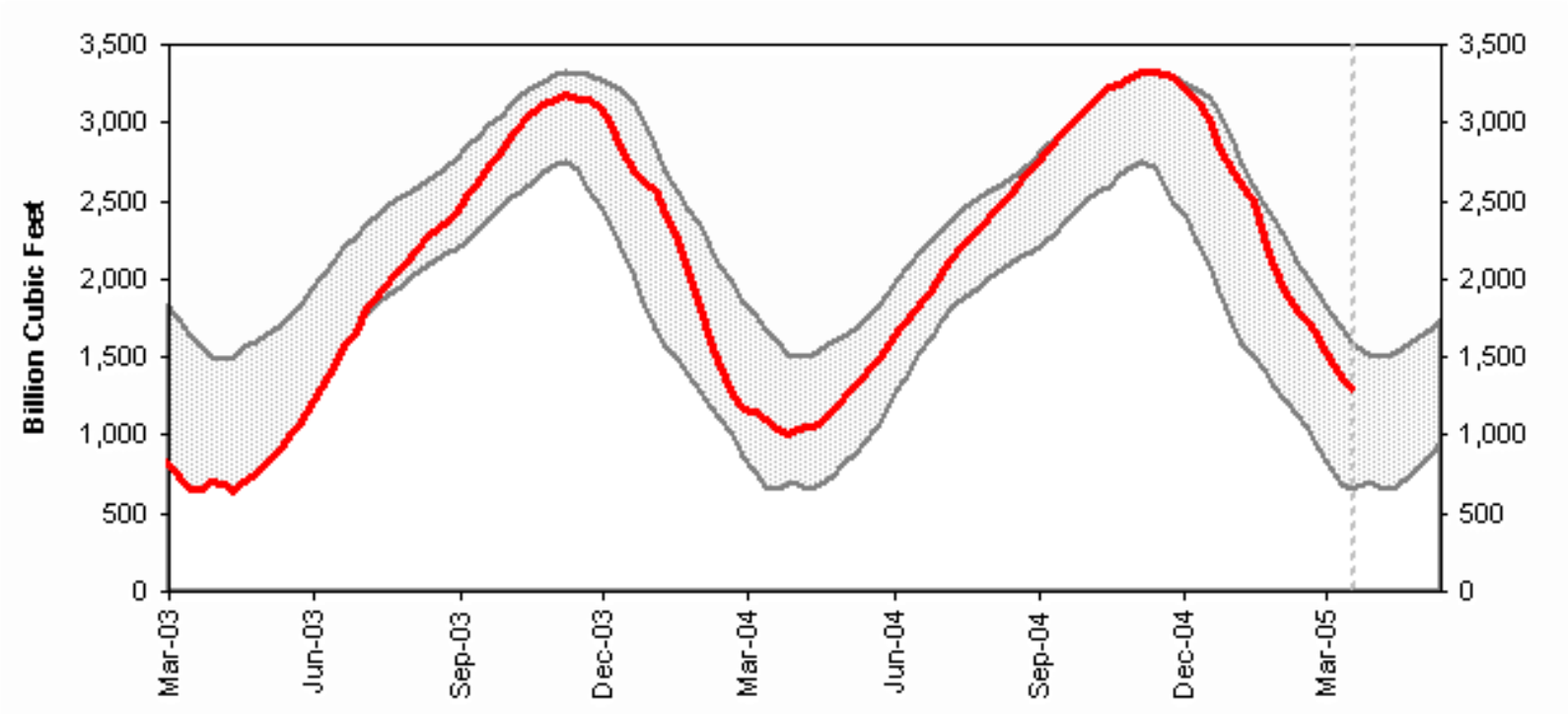


Natural Gas Price Trends (2)



Natural Gas Trends (3)

Working Gas in Underground Storage Compared with 5-Year Range



Source: EIA Natural Gas Weekly

Two Different Perspectives

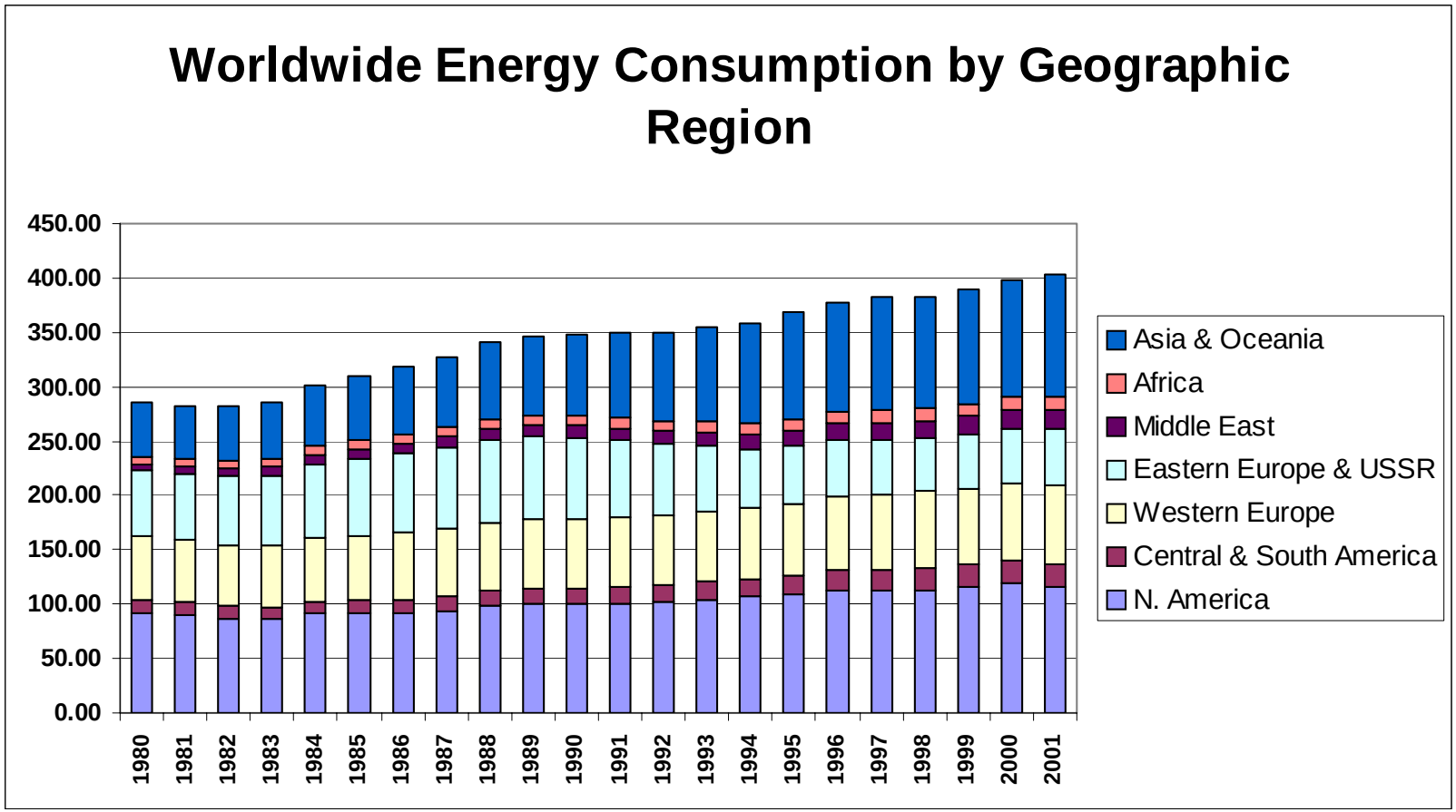
- Fundamental Shift – we have reached a new higher plateau in real energy prices that reflects a new relationship between worldwide demand and supplies

- Temporary Adjustment Period – we will return to historic real prices as new energy sources and technology improvements bring supply into balance with demand

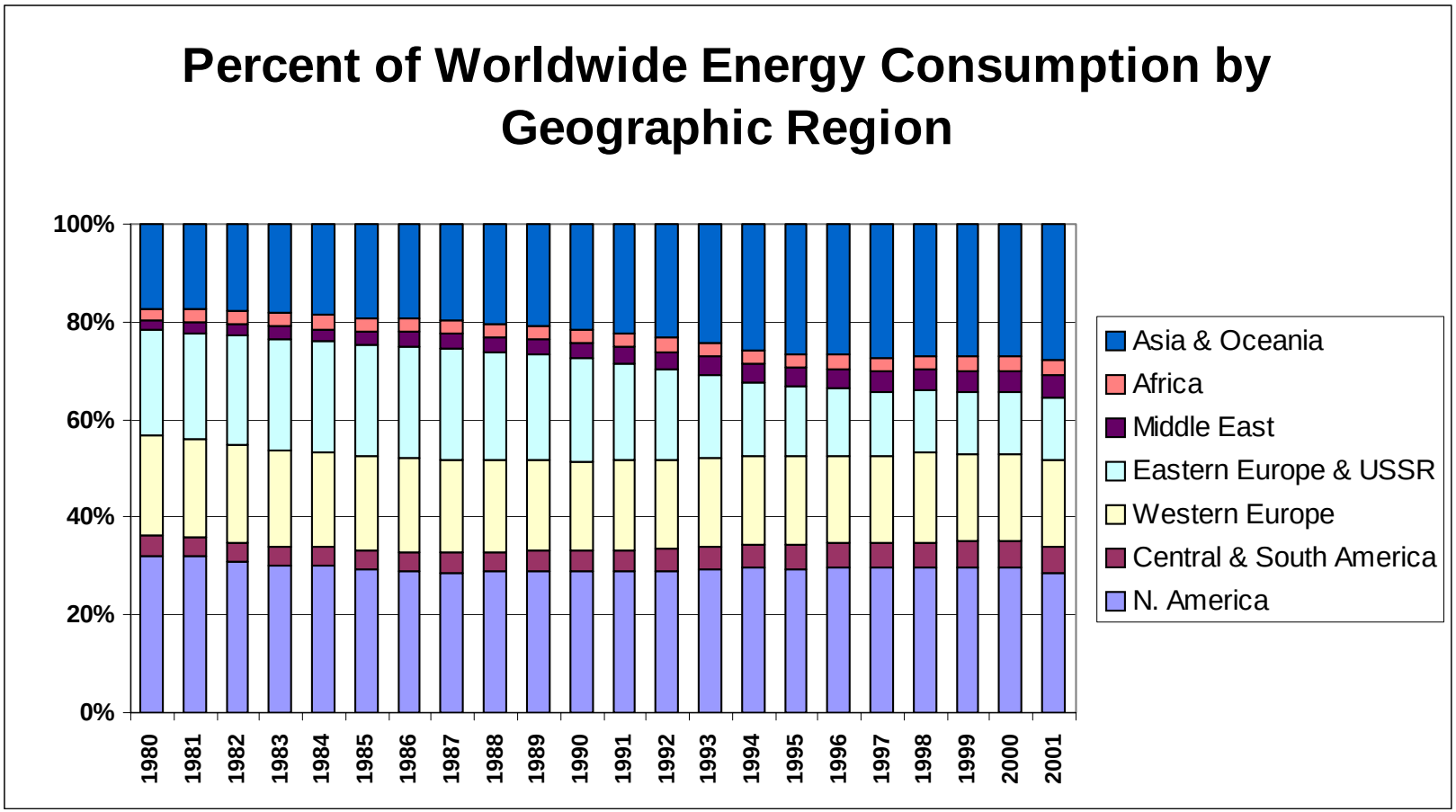
Fundamental Shift

- Key Factors Contributing to Shift
  - Demand Side of the Market
    - Growth - China, India
    - Price Responsiveness
  - Supply Side of the Market
    - Slowing of new discoveries
    - Increasing per unit recovery costs
    - Uncertainty in existing reserve estimates
    - Uncertainty, Disruption, Terrorism

Fundamental Shift - Demand



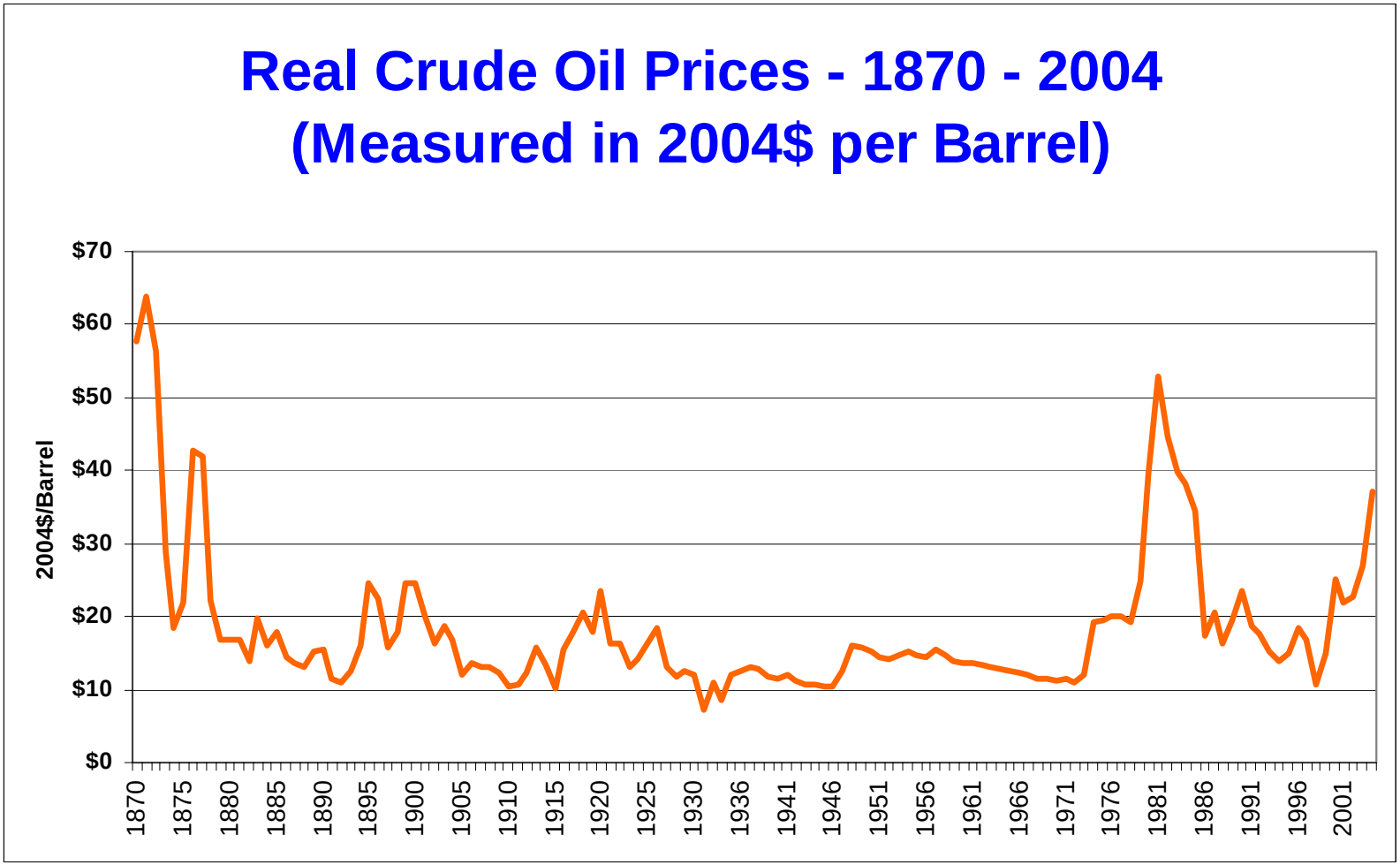
Fundamental Shift - Demand (2)



Temporary Adjustment

- What will return prices to long-term real price levels?
  - Supply Improvements - LNG
  - Inflation - Prices cannot be absorbed in marketplace without increase in prices of finished goods
  - World-wide Recession (“Demand Suppression”)
  - Energy Conservation
  - New Technologies
  - Global Political Stability

Real Oil Prices

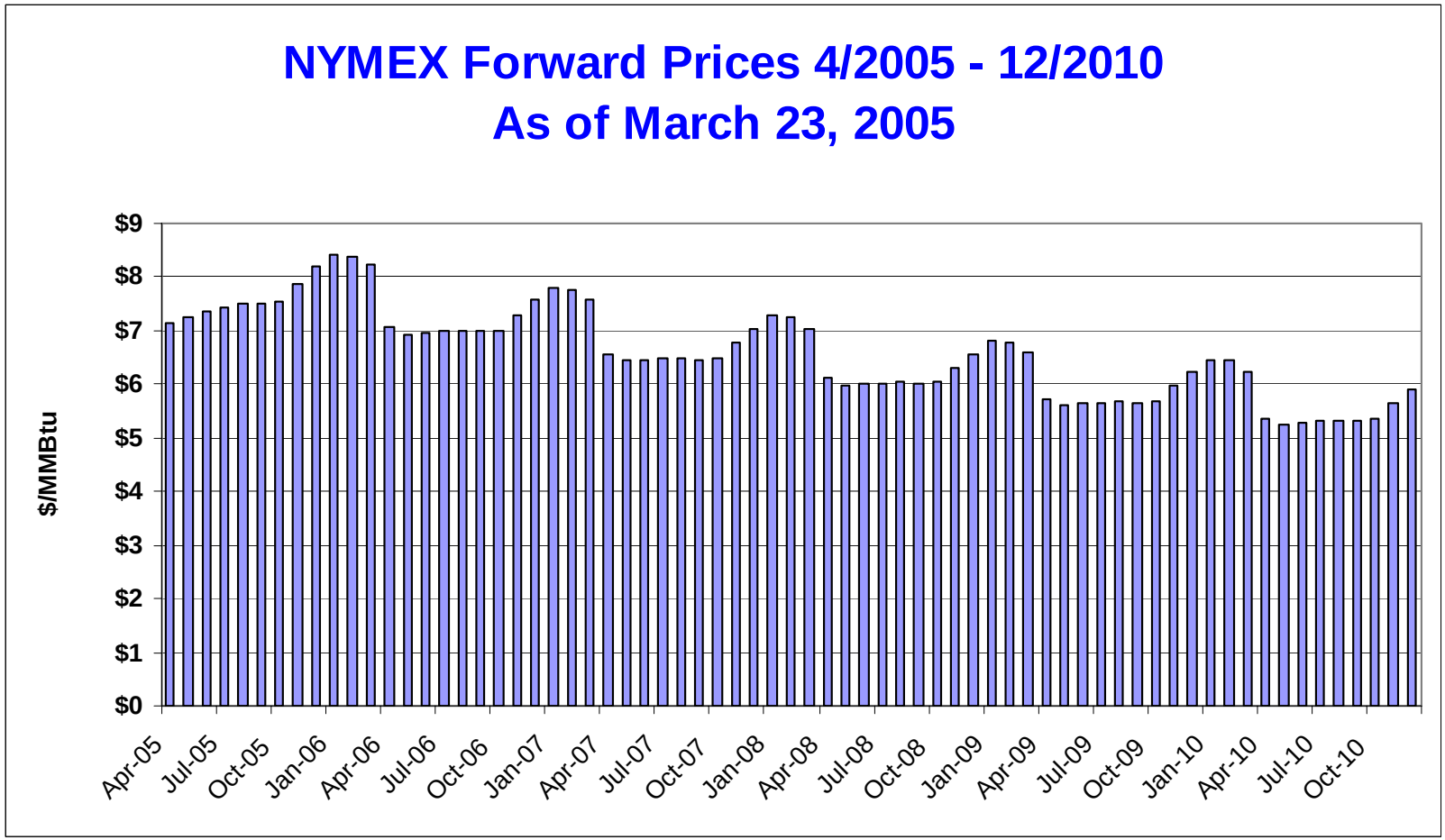


Future Prices

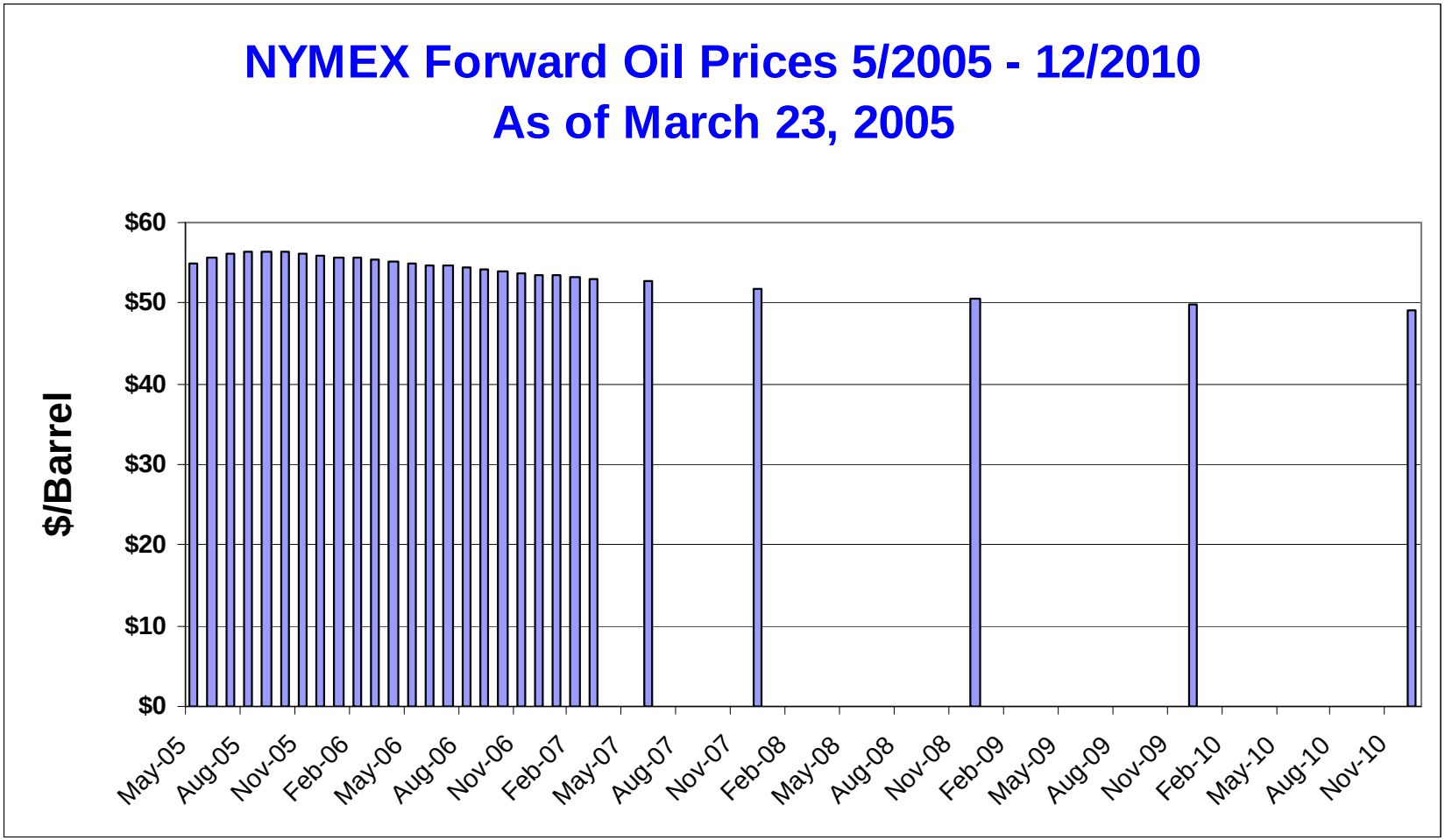
- Observable future prices for oil and natural gas indicate price moderations to levels well above historic real prices for each commodity

- Whether this is a new equilibrium or reflects a continued premium for certainty in a much more uncertain market is impossible to determine

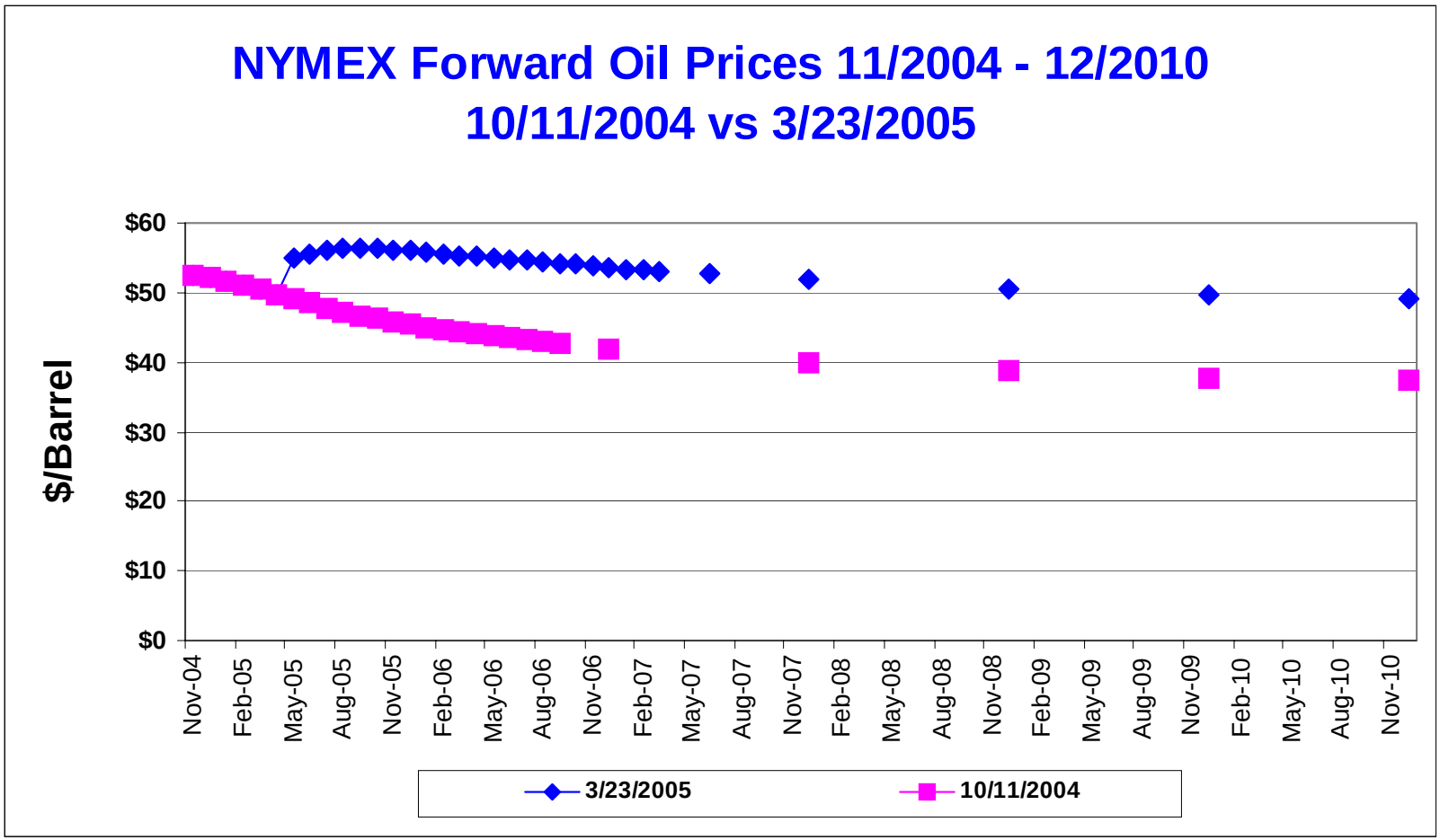
Future Gas Prices



Future Oil Prices



Future Oil Prices (2)



Electricity - Refresher

- Competitive Wholesale Market
- Energy Prices – Market-based
- Capacity Prices – in transition
- Ancillary Services – postage stamp pricing across NEPOOL
- Line Losses – postage stamp by voltage level
- Moved from a single NEPOOL market to regional markets within NEPOOL

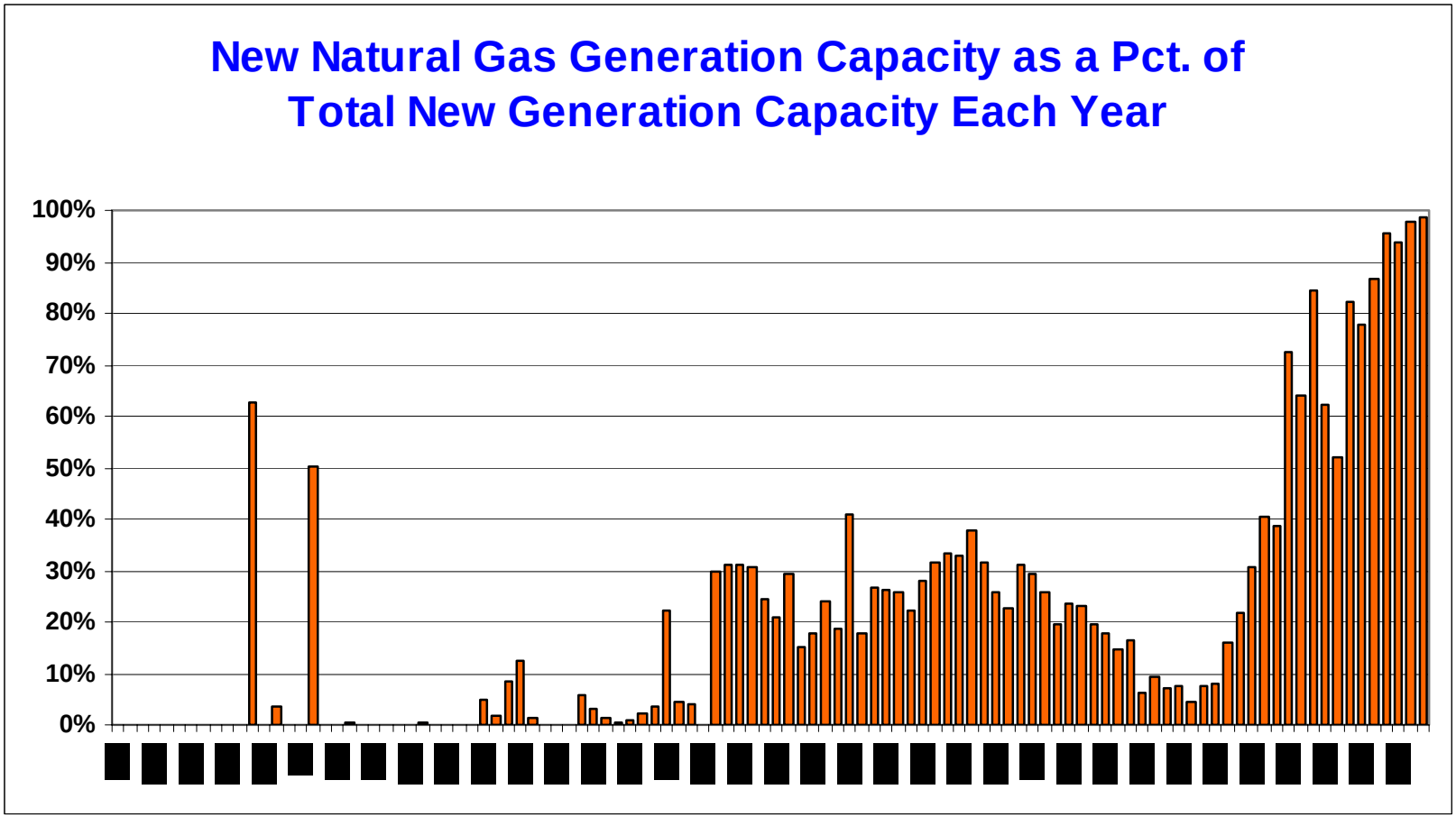
Electricity – Refresher (2)

- Components of Market Prices
  - Energy (per kWh) – primarily driven by fuel costs (usually natural gas) and overall demand. Prices range from $35/MWh to $90/MWh with spikes well above $100/MWh
  - Capacity (per KW/month) – very close to zero, given overcapacity situation in Maine and most of NEPOOL
  - Ancillary Services (per kWh) – reserves priced similar to capacity; control functions priced like energy. Prices range from $1/MWh to $4/MWh with spikes above $100/MWh
  - Line Losses – 1.5% for everyone and an additional 1.5% for transmission, 4.1% for primary and 8.1% for secondary depending on specific customer voltage.
  - Risk and Retail Margin

Gas vs Electricity Prices

- Natural gas is the marginal fuel for electric generation in New England about 80% of the time
- Virtually all new generation in the northeast is natural gas fired

Gas Drives Electricity (1)



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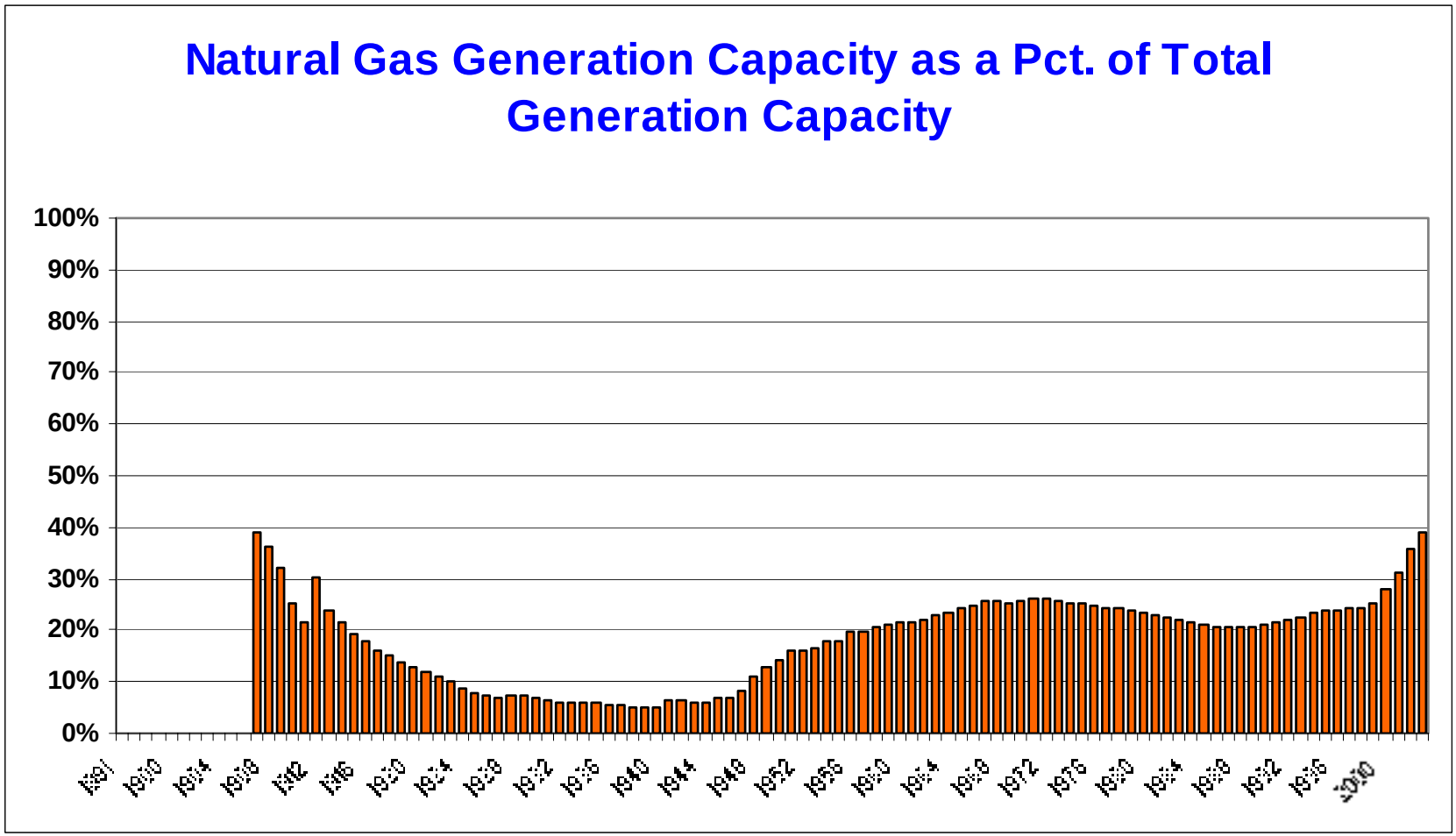

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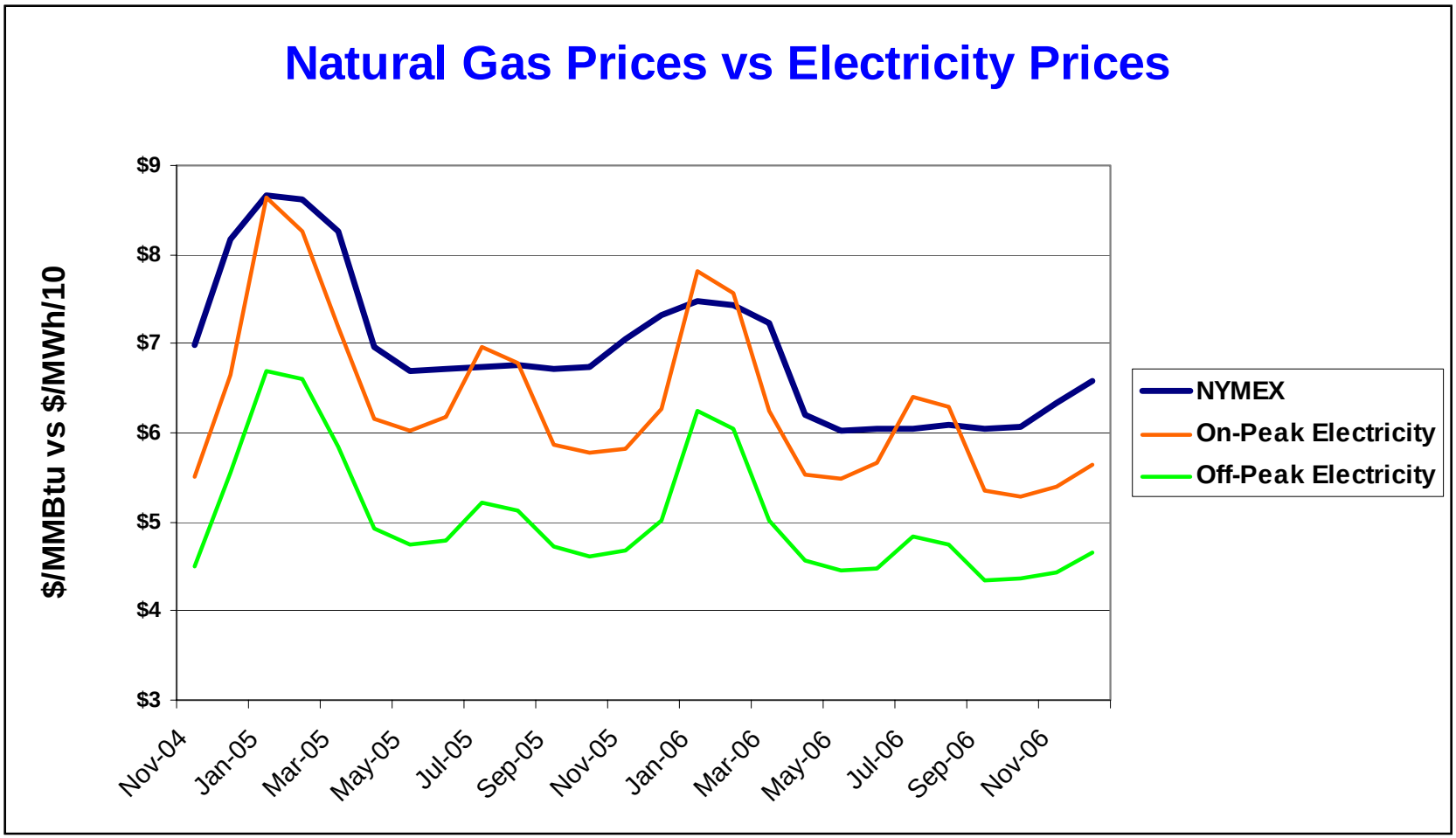
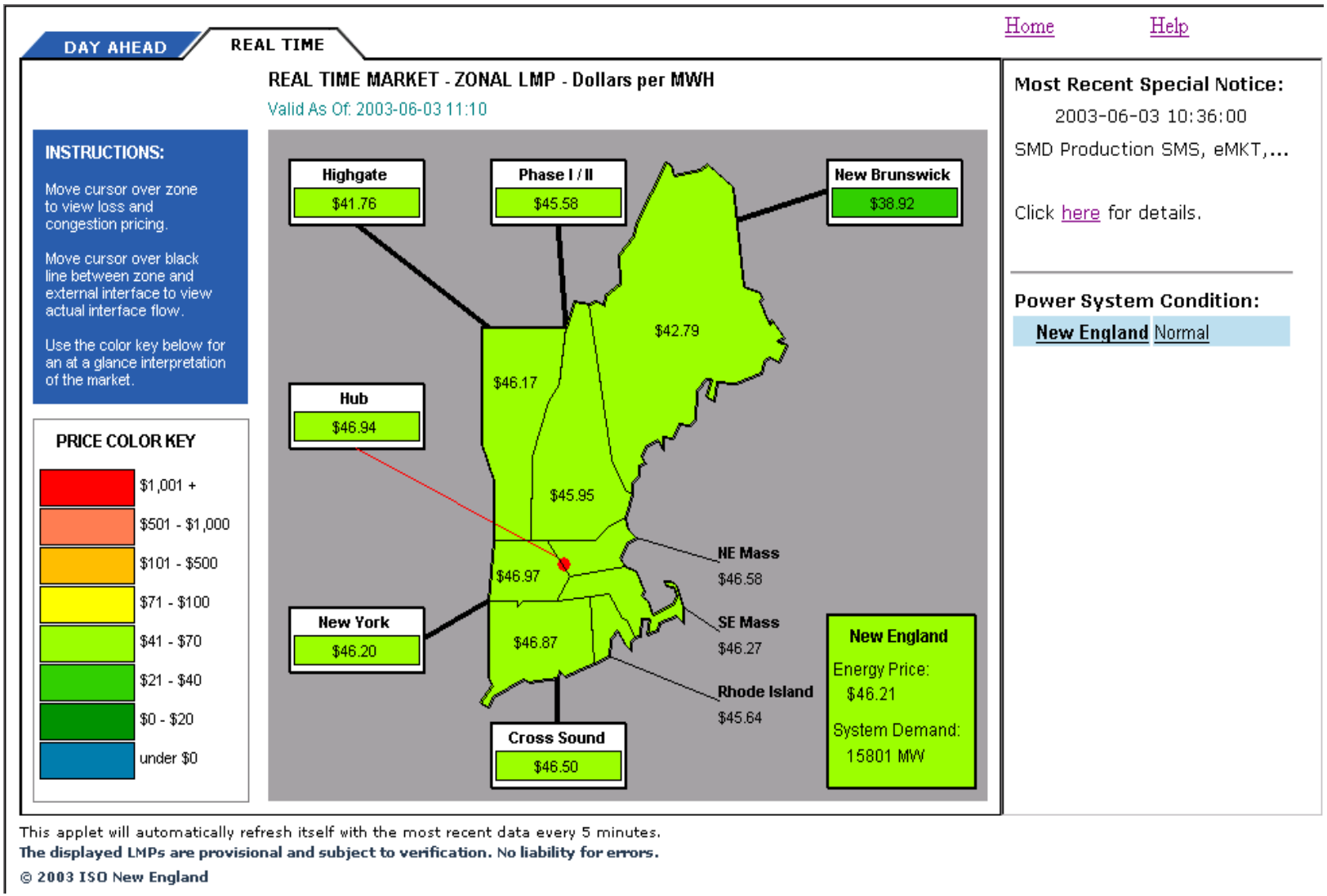


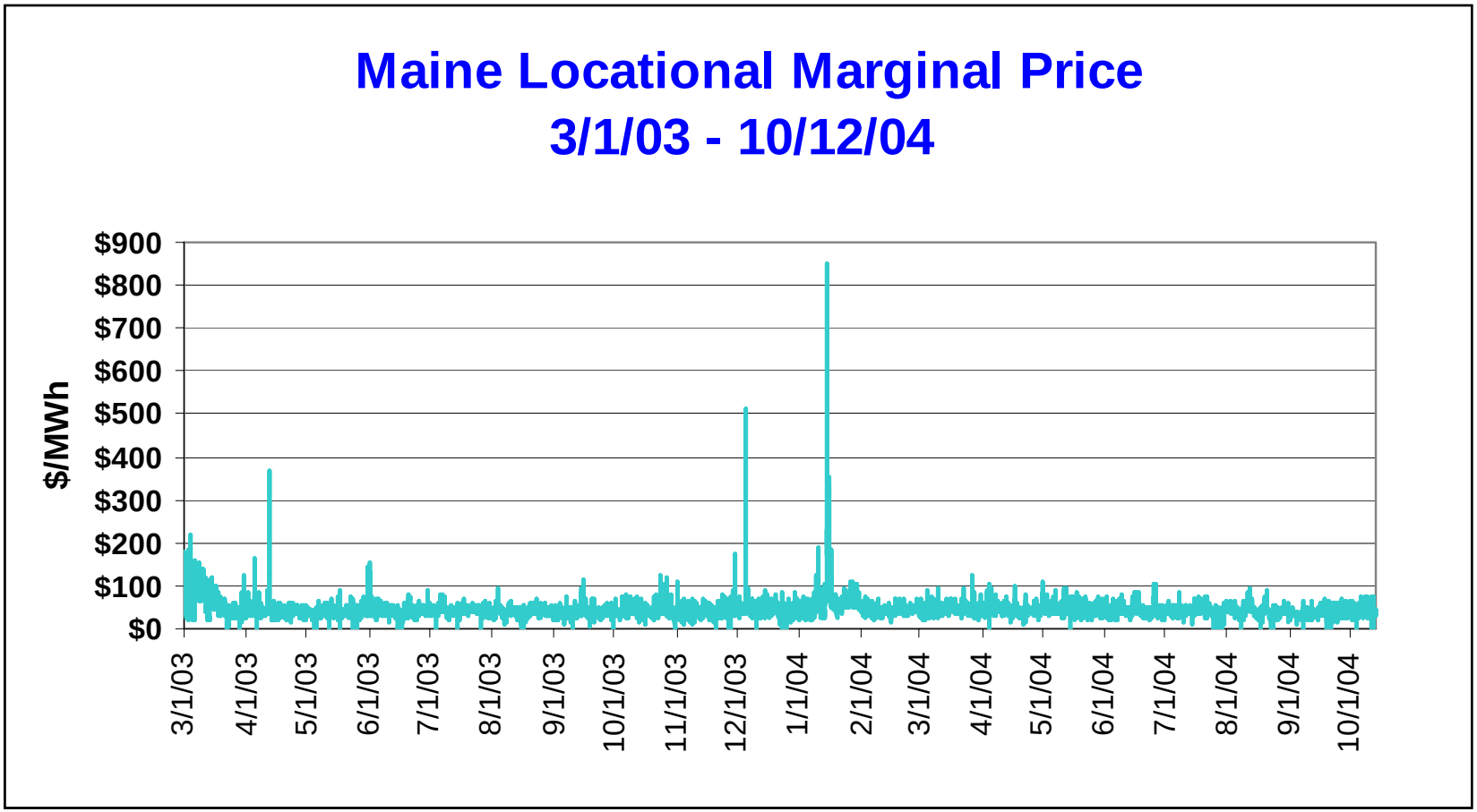
Electricity – Refresher (3)

- Energy Prices - Bid-Based – market clearing price depends on last (or marginal) unit dispatched to meet load.
  - For Generation – Prices are specific to a Node
  - For Load – Single Zone Price applies for all of Maine
  - In general, prices equilibrate throughout NEPOOL
  - During certain hours, differences appear as a result of "congestion" – the inability of low priced energy to flow to high priced zones

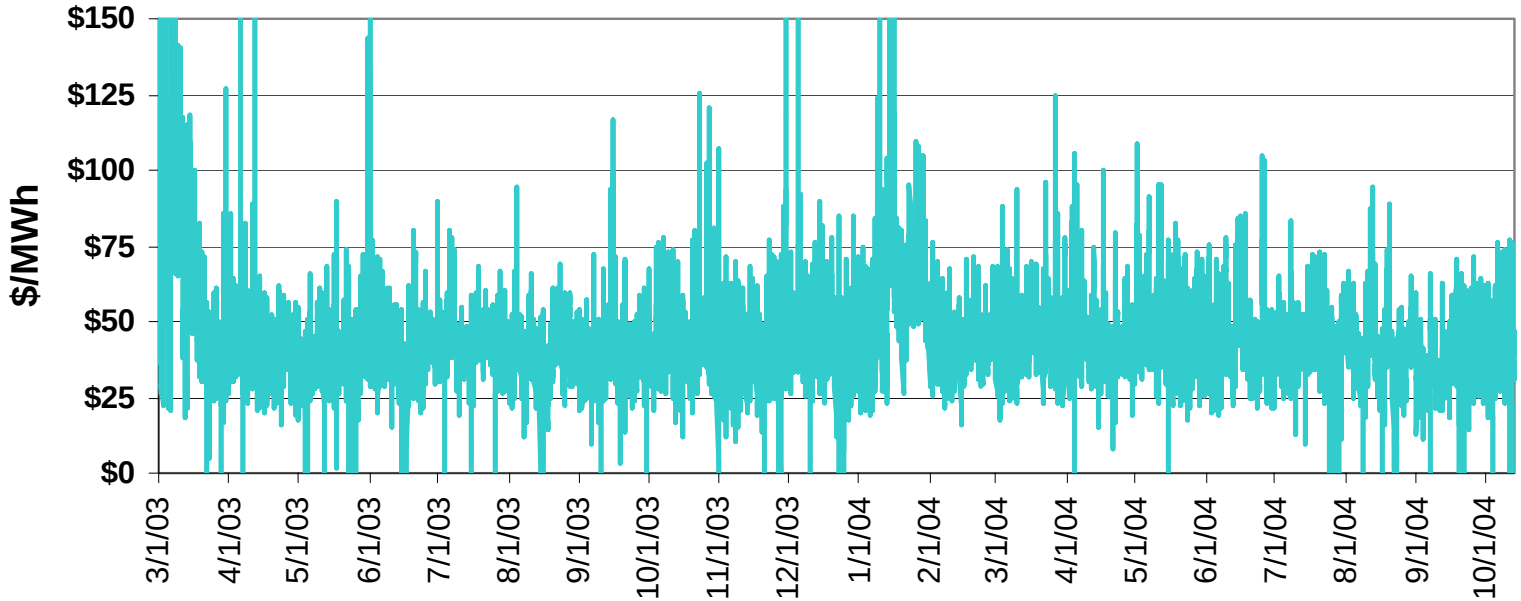
Real Time Map



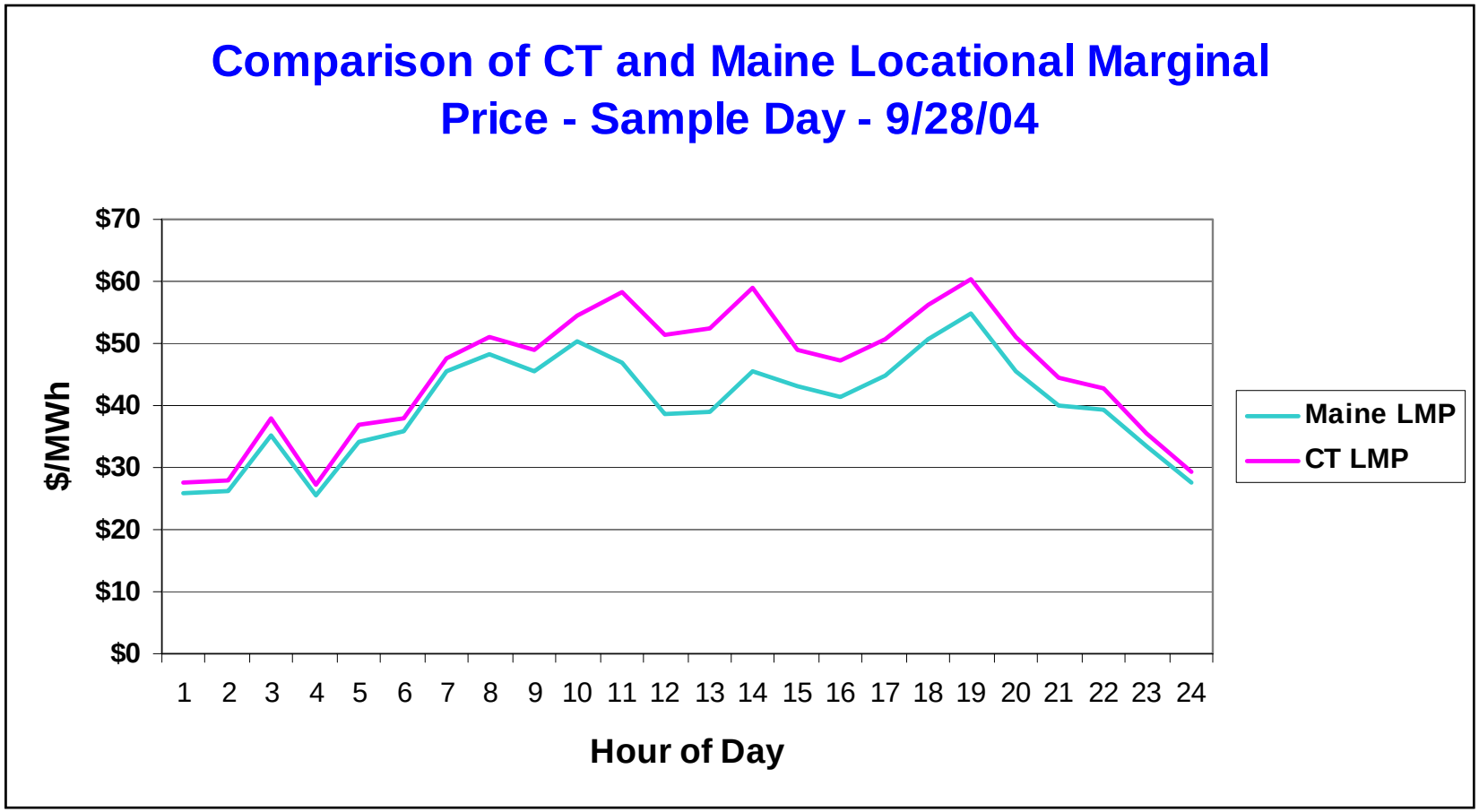
Spot Market Prices - Maine



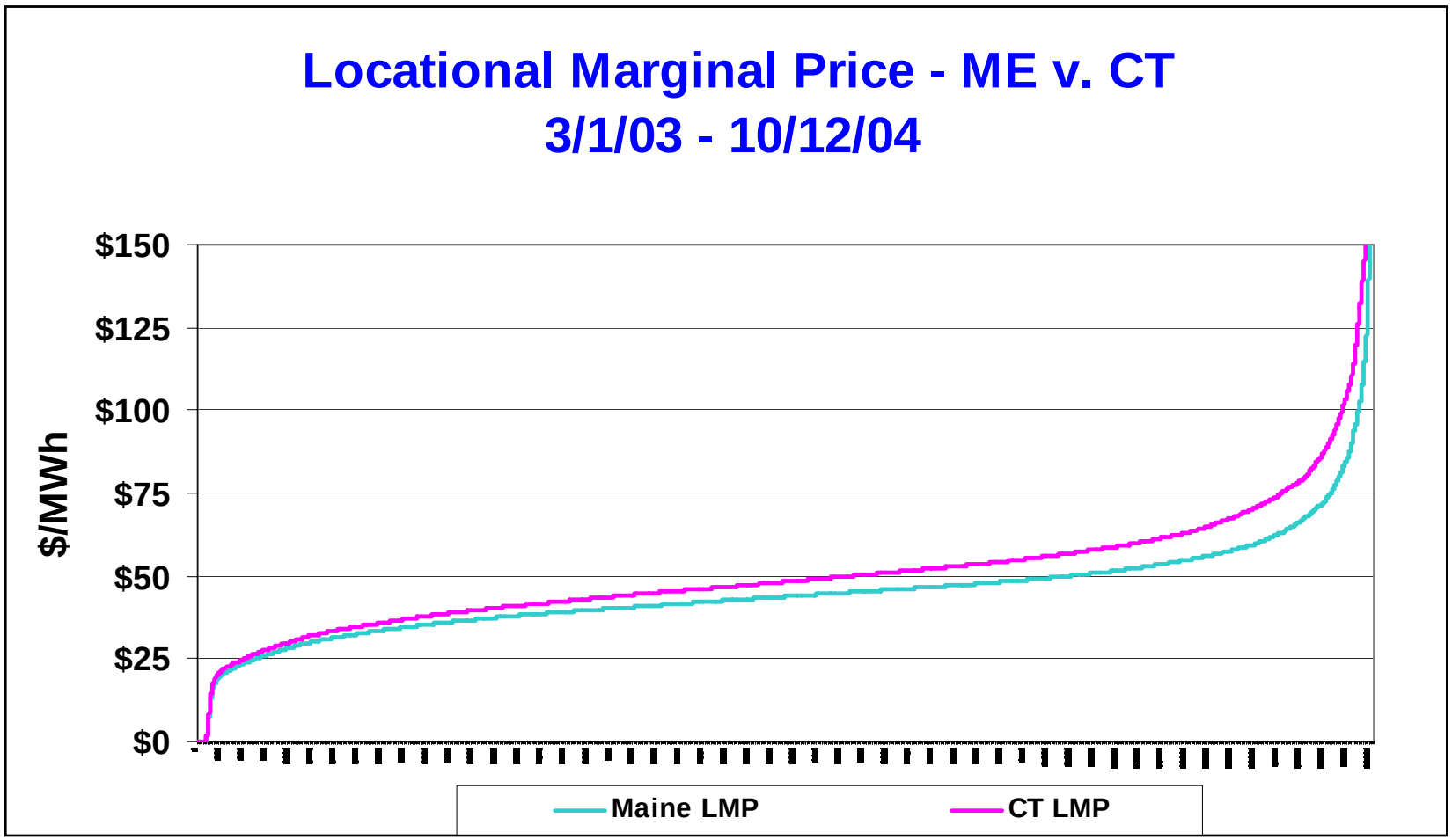
Spot Market Prices - Maine



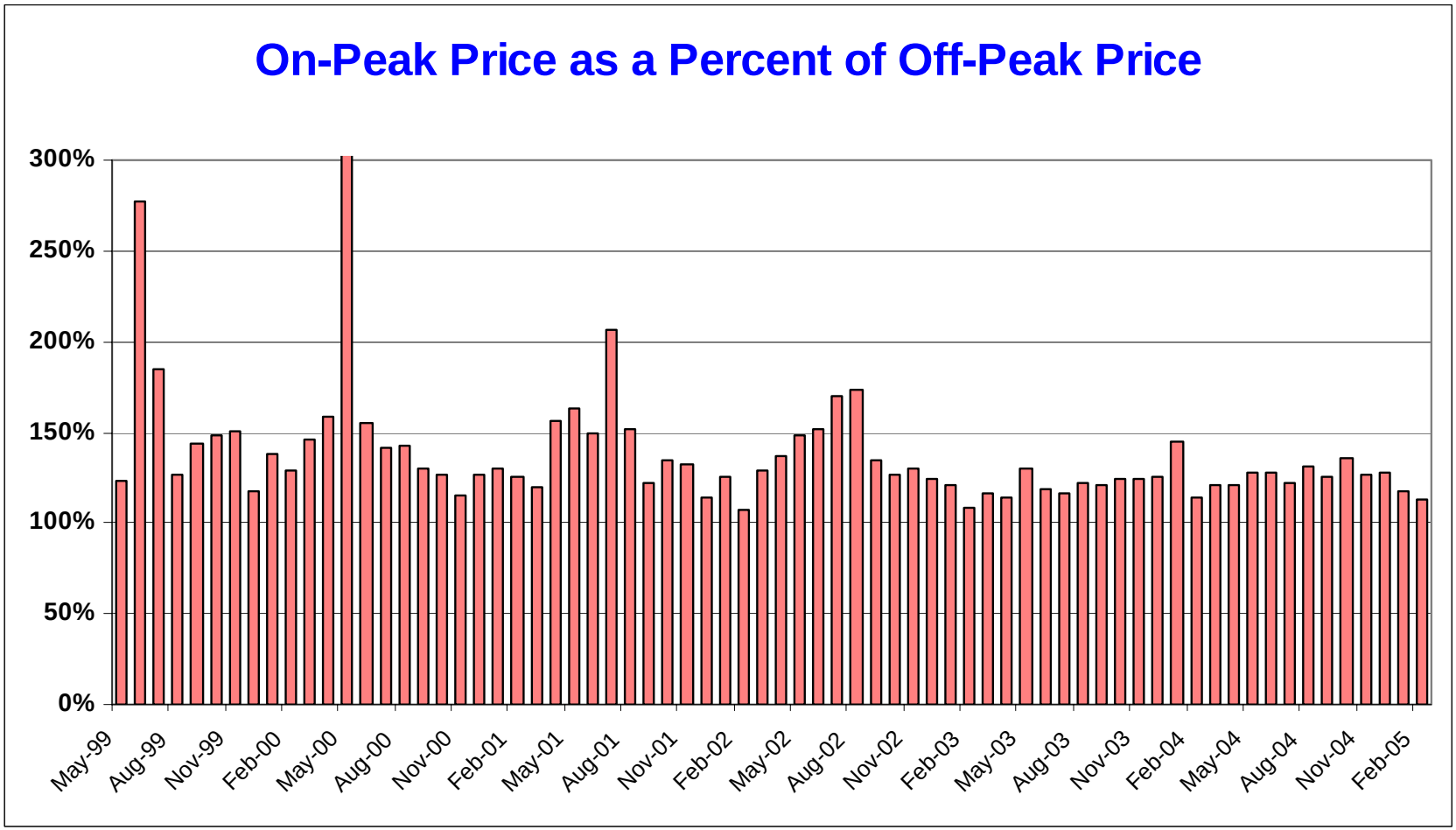
Congestion - Illustration



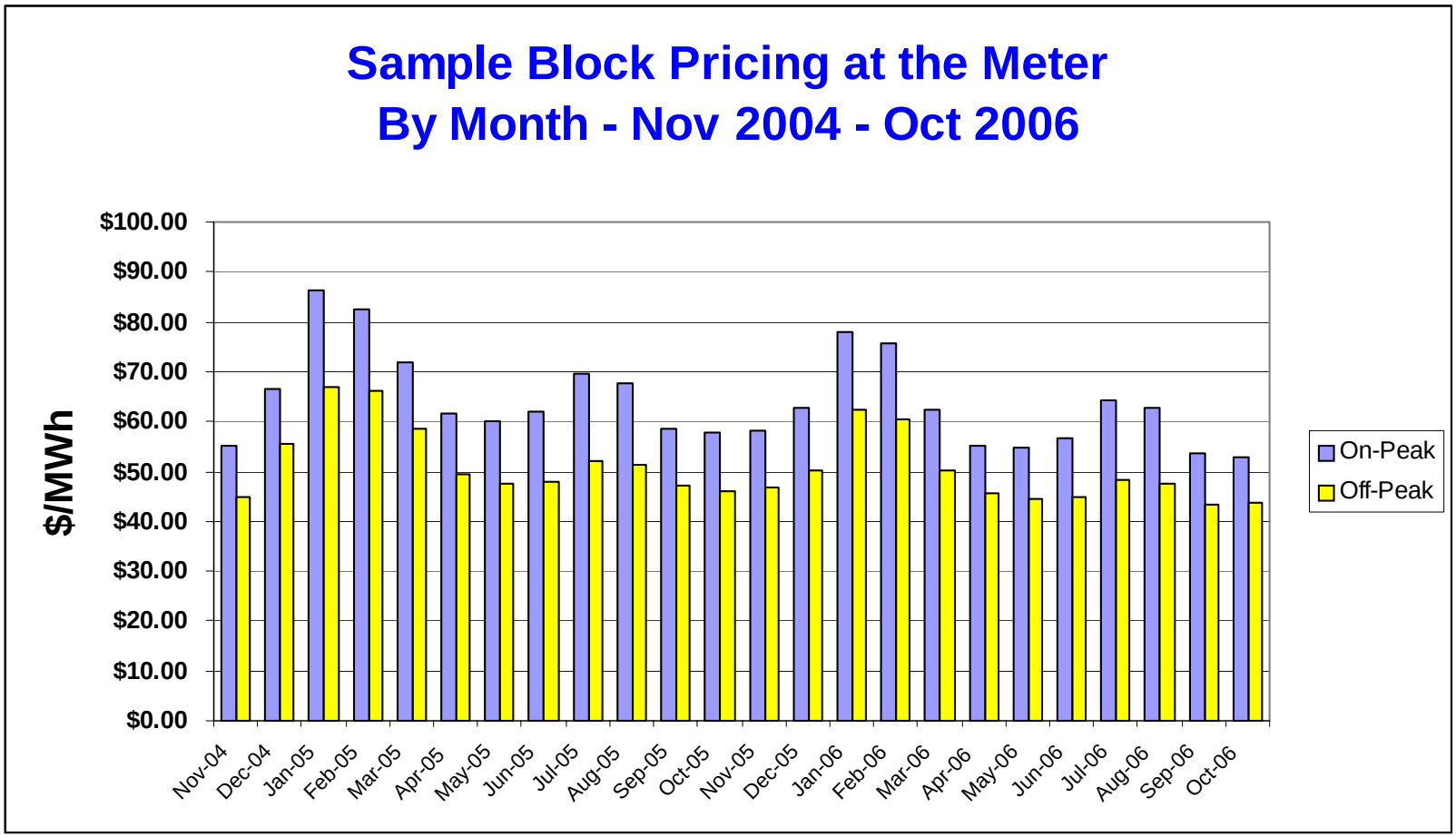
Congestion – Illustration (2)



Capacity v. Energy Driven



Future Electricity Prices



Market Changes - LICAP

There are real long-term problems with the way the capacity market is structured – leading to concerns about future capacity adequacy.

- Proposals to change the way generators are paid for the capacity (availability) value they provide to the market – Locational Installed Capability or "LICAP".

LICAP (2)

The ISO proposal in its present form will impose a charge of approximately $2/kW/month on load in Maine – for a 65% load factor customer, this amounts to about $4/MWh.

The equilibrium charge anticipated by the ISO is about 4 times this amount or approximately $15/MWh.

Procurement Strategies

- Replacement of All Requirements Contracts
- “Strike Price” approach to All Requirements Contracts
- All Requirements w/ “Bandwidth”
- Block Pricing w/ Market Settlement
- Purchase at the Spot Market Price
- Long-term Capacity Purchases

All Requirements

Designed to Approach as Closely as Possible the Type of Service, Pricing Structures and other Terms and Conditions as existed under the Rates and Tariffs of the old Vertically-Integrated Utilities

All Requirements (2)

- To date, the standard retail supply contract in Maine has been for full-requirements service at a fixed price. All price and quantity risks have been borne by Supplier
  - Fixed prices – no pass throughs
  - No bandwidths or take obligations

All Requirements (3)

- Limited Exceptions
  - Maximum Quantity – usage in excess is priced at market
  - Change of Law – changes in market rules or regulations can be passed on to customers – e.g., SMD, ICAP, Loss Factors
  - Credit Assurances

Strike Price

- Market Realities
  - Difficult (impossible) to time market consistently
  - Internal Budget Targets often impose important constraints or goals within Company
  - Monitoring Market takes up valuable time and resources
- Strike Price Solution
  - Set a Trigger or “Strike” Price
  - Execute contract extension as soon as strike price is achieved

Strike Price (2)

- Strike Price
  - First Priority – Meet Budget Targets
  - Rule 1 – As forward time horizon expands, you should be more aggressive on setting “Strike Price”
  - Rule 2 – As you get closer to execution date, adjust “Strike Price” upward to reflect market conditions
  - Rule 3 – Once strategy is adopted, stick to it – key to strategy is consistency

Risk Assumption - Bandwidth

- Bandwidths
  - Large scale of most Suppliers tends to cancel out customer usage above and below predicted levels.
  - Exception is systematic variance associated, for example, with the business cycle. This is exacerbated by the correlation between market price and the aggregate usage.
  - Savings – approximately 1-2% for 20% bandwidth.

Risk Assumption - Blocks

- Block Purchasers/Settlement
  - Customer selects fixed MW usage each hour (may vary by season,month, on-peak and off-peak
  - Block is priced at fixed price per MWh
  - Actual hourly usage greater than or less than the Block is settled against the market price each hour.

Risk Assumption - Blocks (2)

- By selecting Blocks that are close to average hourly usage, the settlement of longs and shorts exposes certain customers to very little risk:
  - Industrial (24x7) type load
  - Load that is not weather sensitive
  - Load that is otherwise interruptible
  - Load that is stable

Risk Assumption - Blocks (3)

- For “good” customers, we have found savings of up to $5/MWh (5-10%) from Block Pricing.
- Risks increase as overall usage changes during the term of the contract.
  - As overall load falls, “longs” increase and represent market speculation.
  - As overall load increases – “shorts” increase and are purchased at the spot market price.

Risk Assumption – Spot Mkt

- Customers have always had the option of purchasing electricity through Supplier at the Spot Market Price.
  - Supplier charges flat monthly fee or minimal fee per kWh to administer relationship.
  - All energy and energy related products are purchased at spot market prices or administratively set clearing prices.

Risk Assumption – Spot Mkt (2)

- Morin Brick Decision permits customers to purchase directly from exchange through an affiliated entity.
  - Customer saves Supplier admin charges plus any Supplier margin.
  - Customer loses potential capacity savings from aggregation of non-coincident loads

Long-term Capacity Purchases

- Renewable Generation
  - Fuel Hedge can be obtained by purchasing capacity in renewable generation facilities
- Risks
  - Purchases may become uneconomic over time because of changes in mkt conditions – remember utility stranded costs.
  - Capacity value of renewable generation is low – exposure to capacity obligations